

ABSTRACT OF THE DISCLOSURE

A method of making a material alloy for an iron-based rare earth magnet includes the step of forming a melt of an alloy with a composition of $(\text{Fe}_{1-m}\text{T}_m)_{100-x-y-z-n}(\text{B}_{1-p}\text{C}_p)_x\text{R}_y\text{Ti}_z\text{M}_n$. T is Co and/or Ni; R is at least one element selected from Y (yttrium) and the rare earth elements; and M is at least one element selected from Al, Si, V, Cr, Mn, Ni, Cu, Zn, Ga, Zr, Nb, Mo, Ag, Hf, Ta, W, Pt, Au and Pb, wherein the following inequalities are satisfied: $10 < x \leq 25$ at%, $6 \leq y < 10$ at%, $0.5 \leq z \leq 12$ at%, $0 \leq m \leq 0.5$, $0 \leq n \leq 10$ at% and $0 \leq p \leq 0.25$. Next, the melt is fed onto a shoot with a guide surface tilted at about 1 degree to about 80 degrees with respect to a horizontal plane, thereby moving the melt onto a melt/roller contact region. The melt is then rapidly cooled using a chill roller to make a rapidly solidified alloy including an $\text{R}_2\text{Fe}_{14}\text{B}$ phase.